

SAVING LIVES: PREVENTING, FINDING, AND CURING CHILDHOOD AND ADOLESCENT TB AND HIV

OVERVIEW

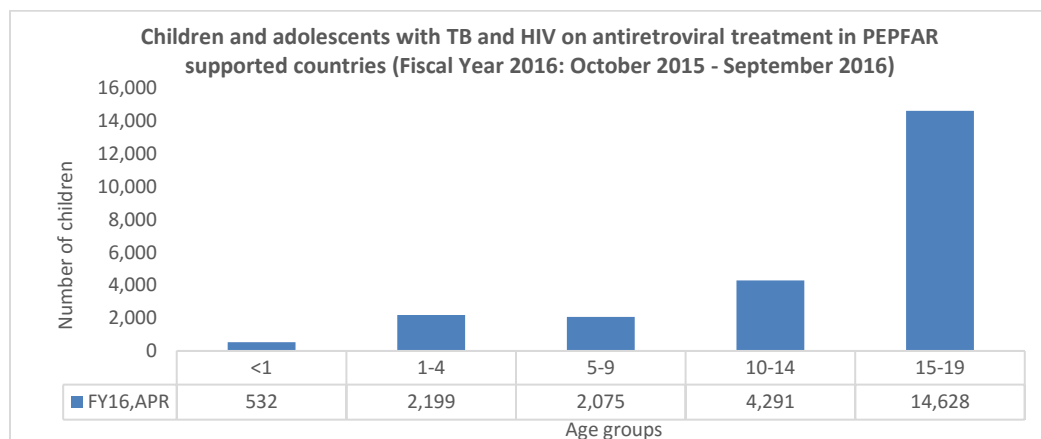
Out of the 10.4 million new global tuberculosis cases (TB) in 2015, 1 million occurred in children under 15 years of age, with at least 210,000 child deaths when including children living with HIV¹. Children living with HIV are more likely to die once infected with TB² – the leading infectious cause of death among people living with HIV. Preventing, finding, and curing TB are critical to reducing childhood mortality, especially for HIV-infected children.

The World Health Organization recommends that HIV programs routinely conduct intensified TB case-finding to diagnose all cases of TB; give TB preventive therapy and implement proper TB infection control measures to prevent additional TB cases; and provide optimal care for children (<15 years) and adolescents (15 to 19 years old) living with HIV. As part of support to country programs, the U.S. Centers for Disease Control and Prevention's (CDC) encourages the appropriate diagnosis, treatment, and prevention of TB in children and adolescents according to World Health Organization policy^{3,4,5} and national guidelines.

CDC'S ROLE

CDC works with national Ministries of Health, HIV, and TB programs as well as multilateral and nongovernmental organizations to implement policies and programs and conduct research that support quality TB and HIV prevention, case-finding, and linkage to treatment for all children and adolescents. CDC also contributes to gathering and reporting global childhood TB and HIV data within the U.S. President's Emergency Plan for AIDS Relief (PEPFAR). In fiscal year 2016, CDC partnered with other PEPFAR agencies to:

1. Support TB screening for over 400,000⁶ children living with HIV
2. Ensure that over 107,000⁷ children and adolescents with TB had documented HIV status
3. Provide antiretroviral treatment (ART) to more than 21,000⁸ children with HIV and TB (Figure 1)



¹ World Health Organization. Global tuberculosis report 2016. 21th ed. Geneva 2016. Available at http://www.who.int/tb/publications/global_report/en/.

² Henegar C, Behets F, Vanden Driessche K, Tabala M, Van Rie A. Impact of HIV on clinical presentation and outcomes of tuberculosis treatment at primary care level. The international journal of tuberculosis and lung disease : the official journal of the International Union against Tuberculosis and Lung Disease 2013;17:1411-3.

³ World Health Organization. Guidelines for intensified tuberculosis case-finding and isoniazid preventive therapy for people living with HIV in resource-constrained settings. Geneva, 2011. Available at http://www.who.int/tb/publications/ICF_IPTguidelines/en/.

⁴ World Health Organization. Guidance for national tuberculosis programmes on the management of tuberculosis in children. 2nd ed. Geneva, 2014. Available at http://www.who.int/tb/publications/childtb_guidelines/en/.

⁵ World Health Organization. Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection: recommendations for a public health approach. 2nd ed. Geneva, 2016. Available at <http://www.who.int/hiv/pub/arv/arv-2016/en/>.

⁶ PEPFAR's Interagency Collaborative for Program Improvement TB-HIV Global Dashboard: Angola and Ukraine did not report on number of persons screened for TB

⁷ PEPFAR's Interagency Collaborative for Program Improvement TB-HIV Global Dashboard: Central Asia Region, Dominican Republic, Guyana, Indonesia, and Papua New Guinea did not report on persons with TB with documented HIV status

⁸ PEPFAR's Interagency Collaborative for Program Improvement TB-HIV Global Dashboard: Central Asia Region, Dominican Republic, Guyana, Indonesia, Papua New Guinea, and Ukraine did not report on the number of persons with TB who were started on antiretroviral therapy



Figure 1: Courtesy of PEPFAR's Interagency Collaborative for Program Improvement TB-HIV Global Dashboard
(Data are included for children and adolescents with available age-disaggregated data)

CDC's priorities for childhood TB

- Prevention of TB by encouraging the implementation of contact tracing to find and treat new TB cases early, and start TB preventive therapy in all eligible children and adolescents
- Rapid, accurate diagnosis and treatment of TB
- HIV testing for all people with TB and timely linkage to HIV treatment
- Monitoring and evaluation of childhood TB prevention, diagnosis, and treatment programs

ACCOMPLISHMENTS / RESULTS

Preventing TB

- **TB prevention in Kenya:** CDC worked with the Kenya Ministry of Health and other stakeholders to implement and evaluate World Health Organization guidance for routine program activities for TB in people living with HIV, including children. After developing tools and procedures for implementing TB screening and preventive therapy, the Kenya Ministry of Health started TB preventive therapy for nearly half of 900,000 persons living with HIV. In CDC-supported sites, 80 percent of all people living with HIV are receiving TB preventive therapy. In an analysis of 3 clinics, 92 percent of all children starting preventive therapy finished therapy⁹.
- **Household HIV and TB screening in Mozambique and Uganda:** CDC is working with partners in Mozambique and Uganda to implement contact tracing and conduct household-based screening for TB and HIV with linkage to appropriate prevention and treatment services for household contacts of people with TB and HIV.

Rapid TB diagnosis and treatment

- **Diagnosing childhood TB in Kenya:** CDC has collaborated with multiple partners, including the Kenya Medical Research Institute and Harvard University, to determine and optimize a feasible combination of non-invasive specimens for TB diagnosis in children. This study of 300 children with TB symptoms found the combination of less invasive stool and nasal wash specimens performed similarly to invasive TB tests, such as the collection of stomach fluid, that often require hospitalization and are rarely available in resource-poor settings.
- **Contributing to U.S. pediatric TB guidelines and international childhood TB guidance:** CDC works with international organizations to contribute to national and international TB guidelines in children and adolescents. Most recently, CDC has contributed to developing a "Roadmap for childhood tuberculosis," led updating of U.S. Health and Human Services pediatric TB guidance, contributed to the development of a blueprint for addressing gaps in childhood TB diagnostics, and informed revised childhood multi-drug resistant TB treatment guidelines with partner agencies.

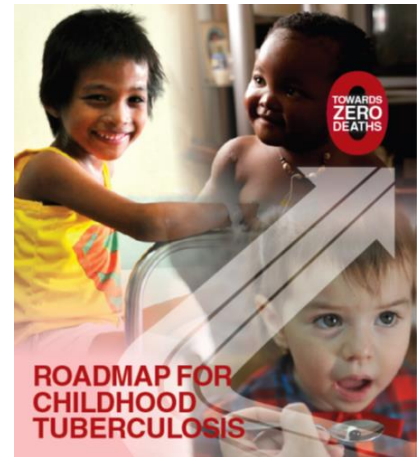
⁹ Masini EO, Sitienei J, Weyeinga H. Outcomes of isoniazid prophylaxis among HIV-infected children attending routine HIV care in Kenya. Public Health Action 2013; 3: 204-8.

HIV testing and linkage to treatment

- **Childhood TB surveillance in Vietnam:** CDC collaborated with the National TB Program in Vietnam to evaluate surveillance, recording, and reporting in children. Only 25 percent of children treated for TB had an HIV test result documented in routine reporting systems compared to more than 90 percent of adults with HIV test results. The evaluation provided essential data not available through routine reporting and resulted in recommendations to improve routine HIV testing for children with TB.

Monitoring and evaluation

- **Evaluation of HIV testing and TB contact tracing in Tanzania:** CDC worked with the Tanzania National Tuberculosis Program to evaluate routine HIV testing in children with TB and document contact tracing completeness for adult TB patients. Through successful, routine HIV testing, more than 200 children with HIV were linked to care after their TB diagnosis.



FUTURE EFFORTS

CDC continues to support national programs to improve rapid, accurate TB diagnosis, treatment, and quality monitoring and evaluation. CDC will also focus on strengthening TB contact tracing, early diagnosis of TB-exposed children with TB disease, and the provision of preventive therapy for all eligible children and adolescents to lower TB morbidity and mortality.

BENEFITS OF OUR WORK

Through these and other efforts, CDC identifies gaps in the prevention and treatment of TB in children and adolescents in the United States and globally. Using these results, CDC works with national programs to implement TB prevention activities, improve TB case-finding, and scale-up HIV testing for all populations at-risk, providing greater access to life-saving care for children and adolescents with TB and HIV.

ADDITIONAL REFERENCES

1. World Health Organization. Roadmap for childhood tuberculosis: Toward zero deaths. Geneva; 2013. Available at <http://www.who.int/tb/publications/tb-childhoodroadmap/en/>.
2. World Health Organization. Automated real-time nucleic acid amplification technology for rapid and simultaneous detection of tuberculosis and rifampicin resistance: Xpert MTB/RIF assay for the diagnosis of pulmonary and extrapulmonary TB in adults and children. Policy update. Geneva, 2013. Available at <http://www.who.int/tb/publications/tb-amplificationtechnology-statement/en/>.
3. International Union Against Tuberculosis and Lung Disease (The Union). Desk-guide for diagnosis and management of TB in children. 3rd ed. Paris, 2016. Available at <http://www.theunion.org/what-we-do/publications/technical/desk-guide-for-diagnosis-and-management-of-tb-in-children3>.